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GEASTER.

Michel. Nov. Pl. Gen. p. 220. Hall. Helv. p. 13.

Geaster medius, radiis plerumquem ultifidis, umbilico seu ore stellato, Michel. p. 220. Tab. 100. Fig. 5.

Lycoperdon volva stellata, radiis multifidis, osculo stellato, Hill. Hist. Plant. p. 51.

Geaster volvæ radiis et operculo elevatis. D. Watson. Act. Phil. N°. 474.

Lycoperdon volva stellata radiis fissilibus. Hill. Hist. Pl. p. 52.

Fungus pulverulentus Turriculam referens. D. Rand. Blacks. Specim. Botan. p. 24. Tab. 2.

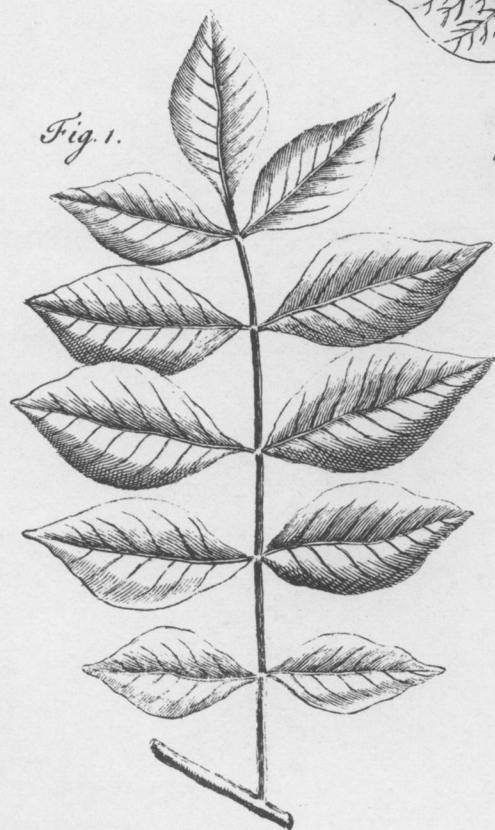
These two elegant Fungi were both found at Hathern, near Loughborough. Mr. Tomlinson. They were both observed for some years successively.

CXII. *A Letter from Mr. John Ellis, F. R. S. to Philip Carteret Webb, Esq; F. R. S. attempting to ascertain the Tree that yields the common Varnish used in China and Japan; to promote its Propagation in our American Colonies; and to set right some Mistakes Botanists appear to have entertained concerning it.*

Dear Sir,

Read Nov. 25,
1756.

AS I had a favourable opportunity this summer, from my situation opposite to Mr. Christopher Gray's nursery garden at



*Arbor Americana alatis foliis succo lacteo
venenata. Pluknet Phyt. Tab. 145 Fig. 1.*



*Sitz vel Sitz doji, vulgo Urus, seu U
Arbor vernicifera legitima folio pinnato Juglandis fr
Kämpferi Amœnitates p. 791.*



*vulgo Uirus, seu Uirus no ki.
annato Juglandis fructu racemoso Ciceris facie
nitatas. p. 791.*

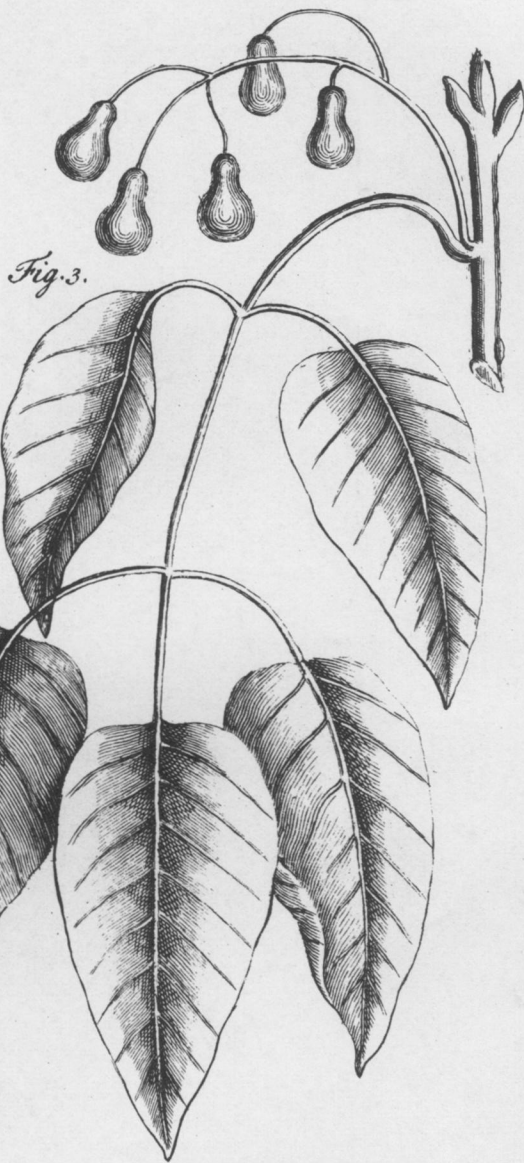


Fig. 3.

*Toxicodendron foliis alatis, fructu purpurco
pyriformi sparso. Catesby's N. Hist. Vol. 1. p. 40.*

J. Mynde sc.

at Fulham, to examine his curious collection of exotic plants, I began with the *Rhus*, or *Toxicodendron*, in order to the clearing up some points disputed in two letters, lately published in the last volume of our *Transactions*, N^o. 49, part I. p. 157 to 166. One from the Abbé Mazeas to Dr. Stephen Hales, on the discovery of the juice of certain species of *Toxicodendron* staining linen of a fine black colour, and the other in answer to it from Mr. Philip Miller, of Chelsea, insisting that it was not a new discovery.

In order to be satisfied of the fact; I made several experiments on the three species of *Toxicodendrons* mentioned by the Abbé Mazeas; and find, that the juices of them do stain black, and if fixed by allum are not to be washed out by soap, or boiling in a lee of pot-ashes: but the pinnated one called by the gardeners the poison ash, did not strike so deep a black as the other two trifoliate ones, being more of a rusty colour.

I went now upon the enquiry to compare, and see, whether in reality this pinnated *Toxicodendron* of our North American settlements, is the true varnish tree of Japan, as asserted by Mr. Miller; and first I found it necessary to know, where this poison tree was described. This I was led to by Mr. Miller's letter, where he says, the poisonous quality is described in the *Philosophical Transactions*, N^o. 367. p. 145 and 146, and a very exact (1) figure of a leaf of it therein referred to in Plukenet's *Phytographia*, Tab. 145. Fig. 1.

(1) Fig. 1. Tab. 24.

In order to know what Dr. Kämpfer has said of this matter, whose words Mr. Miller seems to depend on, I carefully translated his description both of the (2) true Varnish tree, and the (3) spurious one; and find, that his description of the true varnish tree, or Sitz, does not agree with this *Toxicodendron*, which Mr. Miller supposes to be the same; for the leaf-stalk or midrib of this, that supports the pinnæ or lobe leaves, as well as the under part of the leaves, are quite smooth; which is one specific character, that every botanist and gardener knows is necessary to be observed in the proper classing the various species of this genus of plants; many of them being smooth, and many of them downy: whereas Dr. Kämpfer, speaking of the midrib of his true Varnish tree, calls it, "leviter lanuginoso," which may be translated, somewhat downy: and when he describes the under part of the leaves, he says, "dorso incano et molliter lanuginoso," that is, the under part hoary and covered with a soft down.

How far the bottom or lower part of each lobe or small leaf answers to the drawing he has given of it, I shall leave to the curious botanist; for he says it is, "basi inequaliter rotundâ," that is, having some inequality in the roundness of its base: whereas the lobe leaves of our American pinnated *Toxicodendron* come to a point at their footstalks, nearly equal to that at top; as may be seen in Plukenet's figure (4), which I have copied exactly. I have likewise copied minutely, for your inspection, Dr. Kämpfer's figure

(2) See Fig. 2. Tab. 24.
(4) See Fig. 1. Tab. 24.

(3) See Fig. 4. Tab. 25.

*Rhus Sincue foliis alatis, foliolis oblongis
acuminatis ad basin subrotundis & dentatis.*

*A Leaf of the Varnish Tree from Nankin in
raised from seed by M. Webb & M. M.
which Father D'Incarville sent to
the Royal Society
about the Year*

1751.

Fig. 6.

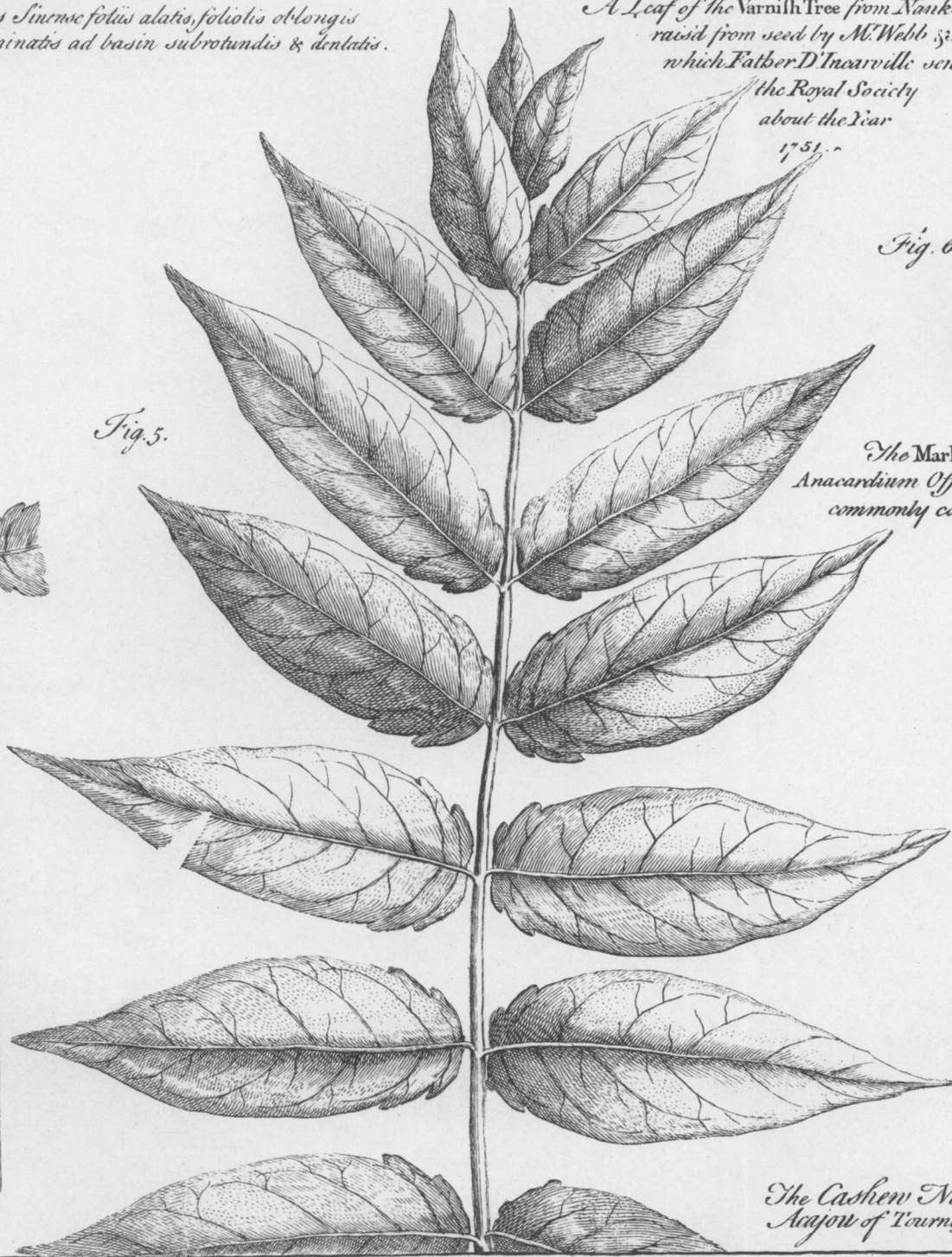
*The Marking Nut
Anacardium Officinale
commonly call'd the*

Fig.

*The Cashew Nut with
Najou of Tournesort.*

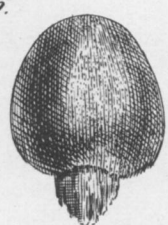
Fig. 5.

The Remainder of the Stalk.



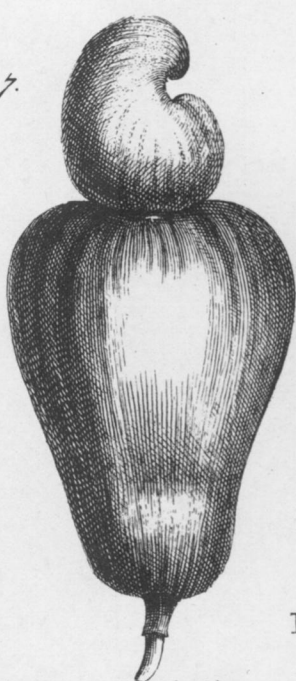
from Nankin in CHINA
 Mr Webb & Mr Willer
 Incarville sent to
 Society
 the Year

Fig. 6.



The Marking Nut of India or
Anacardium Officinale, call'd by *Linnaeus* *Avicennia*.
 commonly call'd the Malacca Bean.

Fig. 7.



Cashew Nut sitting on its fleshy Fruit.
 of Tournesfort. & *Anacardium* of *Linnaeus*.

Fig. 8.



The Official *Anacardium*
 setting on its fruit.

Eali no ki Arbor Vernicifera spuria Sylvestris
Angustifolia. Kampsferi Amanitates P. 794.

Fig. 4.



J. Mynde sc.

of his true Varnish-tree, on the same paper with the other (5).

Dr. Dillenius, late professor of botany at Oxford, has omitted these necessary characters in his description of the true Japan Varnish-tree from Dr. Kämpfer in his *Hortus Elthamensis*, where he gives it as a synonym for this American pinnated *Toxicodendron*: whereas had he been exact in the description given it by his author, he must evidently have made it another species. This has misled the accurate Linnæus, who quotes Dillenius's Synonyms for Kämpfer's *Arbor Vernicifera*, or *Sitz-dsju*.

As another synonym, and in proof of our Poison ash or winged-leaf *Toxicodendron* being the true Japan Varnish-tree, Mr. Miller says in his letter, that Mr. Catesby has given a very good figure of it, in his *Natural History of Carolina*, Vol. i. page 40. where he calls it (6) *Toxicodendron foliis alatis, fructu purpureo pyriformi sparso*; but as the bare inspection into Catesby's figure of this tree will convince the curious enquirer, whether botanist or no, that it cannot be the Poison ash, known to the gardeners, I shall only mention, besides its having a pear-shap'd fruit, that I am persuaded, as are many other persons skilled in these things, that Mr. Catesby never saw the blossom of this tree so as to determine absolutely the genus of it, or he would certainly have given it to us: and that he does not once say, that the inhabitants of Carolina call it the Poison tree, or even that it grows among them. I have (Fig. 3. Tab. 24.) given

(5) See Fig. 2. Tab. 24.

(6) See Fig. 3. Tab. 24.

you a scetch of a leaf, and some of the fruit, which I copied out of Catesby's Natural History, for your own observation, that you may compare it with the other figures, to save you the trouble of turning to the original.

How near Father D'Incarville, the jesuit of Pe-kin's Varnish-tree, which he says grows in the province of Nankin, will agree with the figure Kæmpfer has given us of his Fasi-no-ki, (7) or spurious Varnish tree, which Mr. Miller says in his letter are the same, I shall leave to those gentlemen who may have seen it growing in your curious exotic garden at Busbridge, or at the Physic Garden at Chelsea; at both which places it has been raised from seed received from the Royal Society, sent by Father D'Incarville a few years ago: but lest it may not be in the power of every curious person to take that trouble, I have sent you the figure of one of the leaves, which I drew from a specimen I got in your garden. As it has not been yet described, I shall call it (8) "*Rhus sinense foliis alatis, foliolis oblongis acuminatis, ad basin subrotundis & dentatis.*" You'll observe the lobes or small leaves are of an oblong figure, pointed at top and roundish at the bottom, where they are remarkably jagged with about four teeth. I have joined to the figure of this on the same paper an exact copy of a leaf of Kæmpfer's Fasi-no-ki (9), or spurious Varnish-tree, for your own remarks. Kæmpfer takes notice in his, that the middle nerve often divides the small leaves into two

(7) See Fig. 4. Tab. 25.
(9) See Fig. 4. Tab. 25.

(8) See Fig. 5. Tab. 25.

unequal parts, which is a character I have not observed in this China one; nor have I observed, that it is of a remarkable fine red in the autumn, as indeed many of the Sumachs are; whereas he gives us a very poetical description of the striking red of this wild Varnish at that season. Dr. Kämpfer, in the account he gives of his Sitz-dsju, or true Varnish-tree, takes notice of the effect of its poisonous exhalations: which brings fresh into my memory that this China Rhus, when first it began to extend its leaves in your small stove, had so remarkable a disagreeable smell, that I have frequently complained to you of getting the head-ach and a sickness at my stomach by remaining too long near it; and after you had it removed into your great stove, where, notwithstanding that building is very spacious, and near twenty feet high, yet, as it grew most luxuriantly, one could not without pain continue long near it. I measured one of the whole great leaves of this tree in the summer 1755, and it was above three feet in length. I suppose, as it is a native of Nankin, where the winters are cold, it thrives now well with you in the open air, as it does in the Physic Garden at Chelsea; where it throws out, like yours, a great number of suckers.

After Dr. Kämpfer has described the true Japan Varnish-tree, he then tells us, that the Varnish is collected from it near the city of Jassino, and that it is the best Varnish in the world; but that it is in so small quantities, that there would not be sufficient for their own manufacturies, were it not for a baser kind of Varnish, which is brought to them from Siam, and called Nam-Rak. This Siam Varnish he

tells us, is got in the province of Corfima and kingdom of Cambodia, from the tree *Anacardium*, called by the inhabitants *Ton-Rak*, that is, *Tree-Rak*. The fruit of this tree he says expressly is called in our shops *Anacardium*: his words are, "*cujus fructus officinis nostris Anacardium dictus* (10)."

In Mr. Miller's answer to the Abbé Mazeas he says, this Varnish is produced from the *Anacardium*, or *Cashew nut-tree*: and recommends it to the inhabitants of our southern colonies in America to draw this Varnish from it, as a national advantage.

In order to know what kind of tree bears this officinal *Anacardium*, I consulted Linnæus's *Materia Medica*, and *Species Plantarum*; and there I find it a quite different genus of plants from the *Acajou* or *Cashew nut-tree* of *Tournefort*. He calls this oriental *Anacardium*, *Avicennia*; and has given its characters at large in his *Genera Plantarum*, and ranks it among the *Tetrandia monogynia*; whereas the occidental *Anacardium* or *Cashew nut-tree* of the American islands he calls *Anacardium*, and ranks it among the *Decandria monogynia*.

As the printers or stainers of calicoes in the East-Indies make use of some black dye, that holds its colour, and does not impair their cloths, I tried some fresh nuts of this oriental *Anacardium*, and found, that not only from my own experience, but lately from the confirmation of many gentlemen in the East-India trade, that a fine black colour, which will not wash out, is struck on cotton and linen with the

juice of the shell of this nut. They are known all over India by the name of Marking-nuts, and are sold for that purpose in their bazars or markets, the figure of which is annexed, N^o. 6. Tab. 25.

At the same time I tried the acrid oily substance of the shell of some fresh Cashew-nuts (11), and observed, that it gave no colour to linen, but remained like oil of olives on it.

I have heard indeed, that the juice of the fleshy fruit that supports the Cashew-nut will stain the lips black, and perhaps it may linen; but the gum or liquor which proceeds from the tree is agreed by later (12) authors to be of the same nature and mechanical use with gum arabic; and consequently will dissolve in water; which would render it improper for Varnish. The figure of the Cashew-nut and its fruit are annexed, N^o. 7. Tab. 25.

Dr. Kämpfer further observes, that the quantity of Varnish obtained from this officinal *Anacardium* tree is so great, as not only to serve to varnish all the utensils of China, Tonquin, and Japan, but that it is exported in wooden vessels to Batavia, and several other parts of India. It is not improbable therefore that this is the Varnish mentioned by Father D'Incarville in the Philosophical Transactions, Vol. 48. part I. p. 254, called *Toeng-yeou*; which is so universally used in China for preserving and ornamenting their furniture.

I must now confess to you frankly, that I cannot find, after carefully considering and examining Mr.

(11) See Fig. 7. Tab. 25.
Hist. of Jamaica, p. 225.

(12) See Brown's Nat.

Miller's letter, that he has brought any proof to lessen the merit of the Abbé Mazeas and the Abbé Sauvage's discoveries: and the use I would propose to you from the remarks I have made, is, that, as our Premium Society for the encouragement of Arts and Sciences have a scheme on foot to promote the growth of many really useful vegetable productions, which are at present brought to us, at a great expence, from Spain, France, Italy, the Levant, Africa, and the East-Indies; I think this *Anacardium orientale*, or *Avicennia* of Linnæus, claims a place among the rest; especially, when we consider of what use and importance it is in the two great empires of China and Japan, besides all the other parts of India. The chief difficulty will be the preserving its vegetative quality during two so long voyages; but by many contrivances I am persuaded it will at last be effected; however the very attempt is laudable.

Since I wrote the above I have received a specimen of the gum of the Cashew-nut tree, and find it dissolves in the mouth like gum arabic. It is of the colour of Myrrh; but very brittle, shining, and clear. I have also procured a specimen of the Varnish of China from Mr. Margas, a great dealer in China commodities, just as it was imported from thence: this seems to answer the description of the Siam Varnish. I have made some experiments on it, and find it does not dissolve by being put either into water or spirits of wine.

And further, Dr. Sibthorp, professor of botany at Oxford, informs me in a letter I received lately from him, that they have no specimen of the Sitz, or true Varnish-tree of Japan' in the Sherardian collection,

lection, as mentioned by Dr. Dillenius ; but that they have one of the Fasi-no-ki, or spurious Varnish-tree of Kämpfer, with the synonym, " Toxicodendron foliis alatis fructu rhomboide, Hort. Eltham : " inscribed under, " from Japan : " and that it resembles much our American one. So that Mr. Miller's observations on his Toxicodendron, or Poison ash, may be proper in the sixth edition of his Dictionary, but not in his letter above-mentioned, where he makes the spurious Varnish-tree of Japan, or Fasi-no-ki, the same with the Nankin Varnish-tree, of which the Jesuits of China sent the seed over to the Royal Society a few years ago : whereas they are utterly unlike each other. Dr. Dillenius was perhaps led into this error by depending on the report made to Dr. Kämpfer on the common people of Japan ; which was, that the true Varnish-tree degenerated into the spurious one for want of culture. But I believe our knowledge in this science is so much improved, that such doctrines are not easily admitted among our gardeners (whatever varieties may possibly arise from seed) ; and in this I am persuaded Mr. Miller will agree with me, that the two sorts of Varnish-trees, mentioned by Dr. Kämpfer, are two distinct species of Rhus, or Toxicodendron, and will ever remain so, let the soil be either good or bad that they are planted in. I am,

Dear Sir,

Your affectionate humble servant,

Lawrence Lane,
Nov. 8, 1756.

John Ellis.

P. S.

P. S. Since I wrote the above I received a parcel of the officinal *Anacardiums*, which had been lately brought from the East-Indies. These have their fleshy fruit with their stalks still adhering to them. The better to illustrate this matter, I have given a figure of one of them, Tab. 25. Fig. 8. The manner of the growth of this fruit evidently shews, that it cannot be the *Oepata* of the Hort. Malab. Vol. 4. p. 95. Tab. 45. as quoted by Dr. Linnæus; the whole nut of which is inclosed in a fleshy coat, like an almond. It seems to come nearest to the *Cassubium Sylvestre* of Rumphius, Hort. Amboin. Vol. 1. p. 179. Tab. 70.; where, besides the figure and manner of growth of the fruit, he mentions, that they varnish their warlike and other kinds of wooden instruments, of a black colour, with the milky juice which they draw from this tree; and that they mark themselves on their arms and other parts with the corroding juice of the nut, which continues a long time before it disappears.

Rumphius further particularly describes this plant to be of the *Pentandria monogynia* of Linnæus's method; so that it must differ intirely from the *Anacardium Occidentale*, which belongs to the *Decandria monogynia* of that author.

He likewise makes this remark, that the *Cashew-tree*, or occidental *Anacardium*, is not a native of the East-Indies; but has been brought thither by the Portuguese, from the *Braïls*: and that they are no-where to be found in those parts, but where they have had their settlements.